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Project	Date	Author

TITLE

PINE BEETLE SURVEY

on the

OCHOCO NATIONAL FOREST

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Scientific Aid

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Portland 5, Oregon
December 5, 1945

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PINE BEETLE SURVEY OF 1945
on the
OCHOCO NATIONAL FOREST

Surveys to determine the extent and severity of pine beetle infestations in the virgin ponderosa-pine stands within and adjacent to the Ochoco National Forest have been conducted annually since 1931. These surveys have been carried on through the cooperative efforts of the Forest Service and the Bureau of Entomology and Plant Quarantine.

The 1945 insect survey was conducted during the period October 10 to 19. Personnel participating in the field work were Mr. R. R. Chmard of the Forest Service, and Messrs. J. M. Whiteside and W. J. Buckhorn of the Bureau. Government mess and quarters were also made available by the Forest Service. The shortage of manpower and time necessitated limiting the 1945 survey to a 100 percent cruise of insect caused losses on fourteen 320-acre check plots.

An idea of general conditions on the Snow Mountain District was gained earlier in the season while conducting a survey to determine the pine beetle hazard of the pine stands of this area. Some indication of conditions on the remainder of the forest were also obtained while traveling to and from the plots. These observations, however, were insufficient to permit making general estimates of the 1944 insect losses on the forest.

The 1945 survey completed the 1944 loss data on the plots and provided a partial record of the 1945 loss.

Results of the Survey

The trend of infestation which had been downward since 1938 surged upward through 1944. Plot losses increased 40 percent above the low point reached by the infestation during 1943. The 1944 losses averaged some 62 board feet per acre or .58 percent of stand which is the highest since 1940. While still of normal character over much of the forest, losses, especially on the Maury and Snow Mountain areas, are approaching a light epidemic status.

Drought conditions that began during 1943 and prevailed through 1944 were largely responsible for the upward trend of infestation. The adverse effects on the stands were characterized by abnormally short needle growth, reduced diameter growth and a general increase of characteristics indicating risk to beetle attack.

During 1945 conditions were less favorable for bark beetle development. Above normal precipitation during the spring months, especially in May, greatly improved conditions for tree growth. Subnormal temperatures during June considerably retarded brood development. As a result of these conditions indications are that the infestation trend remained more or less static during the past season.

Losses on the plots during 1945 are estimated to have averaged approximately 66 board feet per acre or .62 percent of stand. These losses were estimated through use of an estimating factor developed from experience as to the probable percent of the total season's loss present on the plot at time of survey.

The total 1944 and the estimated 1945 losses are presented in Table 1.

Snow Mountain Area

During 1944 losses on many portions of the Snow Mountain Area could be classed as light epidemic and in a few localities, especially Nicoll Creek, they approached a moderate epidemic status. Prospects are bright that this serious condition of long standing will be alleviated in the near future through plans being made by the Forest Service for a selective logging program to be directed towards stands in centers of high beetle hazard.

The location of these high beetle risk stands had been determined earlier in the season through a survey conducted by the Bureau to determine the relative beetle risk of all pine stands on this area. The results of this survey were given in a report entitled "Pine Beetle Hazard Conditions on the Snow Mountain Area, Ochoco and Malheur National Forests" by J. M. Whiteside and W. J. Buckhorn.

Other Insects

While the beetle risk survey on the Snow Mountain District was in progress, extensive areas of pine reproduction and poles on the western portion were found to have suffered various degrees of defoliation. Stands on the North Slope of Dry Mountain suffered severely. Not only was the younger stand completely stripped but the lower branches of the more mature trees were also defoliated.

Two insects were involved and in many cases both were active on the same tree. One of these was a tip moth tentatively identified as Eucosma bobana Kearf. The larva of this insect attacked the immature 1945 needle growth mining in the bases of the needles on the terminal and twigs. These partially developed needles remained on the stem but soon turned yellow. The other insect was a sawfly tentatively identified as Neodiprion sp. The sawfly larva consumed the 1944 and older foliage; where defoliation was heavy the 1945 needle growth was also stripped. This insect was the more destructive and largely responsible for the severe defoliation on Dry Mountain.

Id. by Heinrich as "Archips retiniana (Wlsm.), a race of A. fumiferana"
See letter of 4-23-46 from Furniss, filed 28E.

The buds of the defoliated trees remain uninjured; therefore, no permanent effects are expected to result from this year's feeding. However, should the epidemic continue through another season severe damage to the reproduction is likely to result.

A twig beetle Pityopthorus confertus (S.W.) was also found active over much of the Snow Mountain area. Heavy centers of infestation were found to exist around Fir Tree Spring and south of Coyote Spring. This beetle mines the smaller twigs causing the foliage to die and turn yellow presenting a flagging appearance to the trees. In areas of heavy infestation up to 25 percent of the foliage was affected. This damage to twigs and foliage undoubtedly seriously affects the tree's vigor rendering it more susceptible to attack by the western pine beetle.

Climatic Phenomena

On August 10 a terrific hail storm, several miles in width, swept into the west side of the Snow Mountain area about six miles north of Doe Spring G. S. and traveled about 16 miles northeast, more or less following the Doe Spring road to Allison R. S. and thence on up to Snow Mountain. Hail stones over one inch in diameter were reported to have fallen at Allison R. S. Considerable foliage and small twigs were stripped from the trees in some places forming a solid mat on the ground. Almost two months later the trees still presented a bedraggled appearance. The loss of foliage and the battering received undoubtedly lowered the vitality of the trees to a considerable extent. This may result in an increase of beetle activity in the area covered by the storm.

Foliage of ponderosa pine and white fir around Big Summit Prairie suffered considerable frost injury during the winter of 1944-45. It was reported to have been especially severe on Johnson Creek. Some damage was also noted around Lytle and Williams Prairies. This injury is not considered serious from the beetle standpoint as a low endemic infestation usually prevails on this portion of the forest.

Recommendations

In general the insect situation on the Ochoco can be classed as good. Only on the Maury and Snow Mountain areas above normal infestation exists. This is largely of light epidemic status except on the Snow Mountain where a few centers of moderate epidemic continue to exist. None of the infestation is sufficiently aggressive to warrant direct control measures. However, plans for selective logging on the Snow Mountain area should be carried forward rapidly as possible to alleviate the serious condition of long standing in the high risk stands of this area.

The defoliated areas should be kept under close surveillance during the coming season as little is known of the habits of the two insects and there is a possibility of damage to the mature stand.

Ponderosa Pine killed by bark beetles on virgin check plots
Ochoco National Forest and adjacent private lands

Area and Plot	Plot Description T	R	Sec.	Pine Timber Acres	Pine Volume B. M.	1944 Loss No. trees	Volume B.M.	BM Per Acre	% of Stand	Ratio to 1943	1945 Loss Trees Actually Marked	Est. of probable total for Season No. Trees	Volume B.M.	BM per Acre	% of Stand	Ratio to 1944
Mitchell Spanish Pk./	13S	24E	23 S½	310	4,324,370	21	20,380	66	.47	2.08	14	20	20,840	67	.48	1.02
Prineville																
Stevenson	11S	18E	36 E½	320	4,457,310	22	17,970	55	.40	1.79	13	18	19,990	62	.45	1.11
Dry Creek	13S	17E	29 E½	320	2,706,380	19	14,570	46	.54	2.32	8	11	13,930	44	.52	.95
Wildcat	13S	18E	5 W½	320	3,409,590	28	15,300	48	.45	1.67	24	33	23,570	74	.69	1.54
Area Total				960	10,573,280	69	47,840	50	.45	1.87	45	60	57,490	60	.54	1.20
Summit Prairie																
Black Mtn.	14S	22E	9 W½	320	3,747,150	19	27,180	85	.73	2.30	10	14	17,110	54	.46	.63
Horse Prairie	15S	21E	29 E½	320	2,965,570	22	13,110	41	.44	1.12	17	24	12,700	40	.43	.97
Paulina Butte	14S	23E	32 E½	320	2,533,350	11	12,260	38	.48	1.40	9	13	24,530	77	.97	2.00
760 Spr.	14S	26E	7 S½	320	5,523,750	9	16,840	53	.31	4.16	10	14	21,730	71	.41	1.35
Sunflower	16S	26E	33 W½	304	3,152,230	10	7,890	25	.25	1.49	7	10	6,630	22	.21	.84
Area Total				1,584	17,922,050	71	77,280	49	.43	1.65	53	75	82,700	52	.46	1.07
Maury Mtn.																
Double Cabin	18S	20E	10 N½	320	3,049,430	23	23,880	75	.79	1.07	21	34	33,700	105	1.11	1.41
Snow Mtn.																
Nicoll Cr.	21S	25E	17 W½	320	3,079,120	49	30,880	96	1.00	2.17	35	43	27,950	87	.91	.90
Soda Spr.	20S	25E	4 W½	285	2,486,450	24	27,160	95	1.09	1.09	14	24	34,340	120	1.28	1.27
Bixby Spr.	20S	26E	12 S½	290	2,727,290	33	25,700	89	.95	1.95	15	20	14,250	49	.52	.52
Emigrant Bu.	21S	28E	6 E½	300	2,588,430	23	16,940	56	.66	1.50	14	19	16,920	56	.65	1.00
Area Total				1,195	10,881,290	129	100,680	85	.93	1.59	78	106	93,460	78	.85	.93
FOREST TOTAL - 14 PLOTS				4,369	46,750,420	313	270,060	62	.58	1.66	211	295	288,190	66	.62	1.07